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Agricultural Research Institute, Pusa

**Report on the Flax Experiments
conducted at Dooriah during
the year 1911-12**

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INTRODUCTORY.

MR. Vandekerkhove's Report on the Flax Experiments at Dooriah during the past year again shows a profit. The amount is Rs. 63 per acre. In spite, however, of this satisfactory result, planters are not inclined to take up the growth and manufacture of the fibre. This seems chiefly due to the large amount of expert knowledge and capital required on the industrial side which are not easily commanded by the grower and there is, therefore, a difficulty in combining the two undertakings. In order, therefore, to throw light as to the profits to be earned separately by the grower and the manufacturer of the flax, the two operations will, in future, be conducted separately. The industrial aspect will be worked on the central factory system, the plant being sold to it by the grower as straw at Re. 1 per maund. The accounts of the grower and the Factory will be kept separate, and in this way it will be possible to know from the results what prospects of success will accrue in the two operations.

BERNARD COVENTRY,

Agricultural Adviser to the Govt of India,

PUSA ;
The 6th May, 1912.

Report on the Flax Experiments conducted at Dooriah during the year 1911-12.

The following has reference to the previous report 1910-11, page 10, Table IV, Item 10.

There seems to be every year a certain amount of flax suitable to be only once retted while the water is at about 80 degrees Fahrenheit and which we could start scutching on the 15th November. This being so a vat capacity of from 12,000 to 15,000 cubic feet is sufficient.

For example.—Retting season from about 25th October to about 25th of December—

Suppose *bighas* 120 \times 35 mds. per *bigha*—4,200 mds. to be retted.

One vat of 1,500 cubic feet holds about 80 mds. of flax straw.

Let us consider the minimum. Vat capacity of 12,000 cubic feet.

12,000 cubic feet \div 1,500 cubic feet = 8 vats.

8 vats will hold $8 \times 80 = 640$ mds. of straw.

Suppose the vats can be filled 3 times with straw to be once retted.

		Mds.
Mds. $640 \times 3 =$ mds. 1,920 = Net	1,920
„ 640×7 in twice retting = mds. 4,480 \div 2 =	Net	2,240
TOTAL . .		4,160

Including loading and unloading of vats, take an average of 6 days of retting for each process = $3 + 7 = 10$ times $\times 6 = 60$ days. This brings us to the end of December, when it is about time to have the retting finished. Water is then getting down to about 60 degrees, and retting is then very slow.

Actual and net balance of previous year (1909-10), page 9.

	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Seed sown or sold	1,171	3	6
Flax fibre maunds 1,888 at Rs. 34-11-7 per maund (all charges deducted).	6,528	0	10
Flax tow, maunds 130, at Rs. 12-3-3 per maund (all charges deducted).	1,586	6	6

TOTAL RETURNS . .	9,285	10	10
LESS TOTAL EXPENDITURE . .	5,459	0	5
NET PROFIT . .	3,826	10	5

Rupees 3,826-10-5 for 60 *bighas* = Rs. 63-12-3 per *bigha* or Rupees 63-12-3 \times 1-14558 = Rs. 73-0-9 per acre.

The following report summarizes the results of the actual work done during the season. The table below indicates sowings per field and the results during the season 1910-11.

TABLE I.

Number of field.	Date of sowing.	Amount sown.	Rate of seed per <i>bigha</i> .	Returns of rippled straw per field.	Returns of seed per field.	Average returns of R. straw per <i>bigha</i> .	Average returns of seed per <i>bigha</i> .	Previous History.
	<i>Year.</i>	<i>B. C.</i>	<i>M. S.</i>	<i>M. S.</i>	<i>M. S. K.</i>	<i>M. S.</i>	<i>M. S. K.</i>	
	1910.							
1	9th October	1 0	1 15	36 0	3 29 0	36 0	3 29 0	Seeth matured <i>Rabbi</i> and <i>Makri</i> .
2	16th October	5 5	1 15	296 10	16 26 12	56 10	3 7 8	Two years J. Indigo, Oats seeth matured.
3	28th and 29th October.	10 15	1 20	353 0	35 23 8	32 30	3 9 0	J. Indigo seeth matured, <i>Rabbi Chowmas</i> .
4	1st November	3 10	1 20	111 10	9 13 4	*
5	3rd "	5 10	1 20	206 20	20 18 8	37 20	3 29 4	Java Indigo, <i>Rabbi Chowmas</i> seeth matured.
6	4th "	1 0	1 16	24 10	3 2 0	24 10	3 2 0	Mustard <i>Charas</i> seeth watered.
7	" "	1 0	1 22	20 0	1 32 0	20 0	1 32 0	Experiment on intervals for resowing.
8	6th "	5 13	1 20	234 20	23 34 6	42 20	4 13 8	Barley, seethed <i>Chowmas</i> , Oats.
9	7th "	5 10	1 20	241 0	22 15 0	43 50	4 3 0	Java Indigo Oats - <i>Chowmas</i> .
10	8th and 9th November.	6 15	1 20	255 0	17 37 8	37 30	2 26 8	J. Indigo, Carrots <i>Chowmas</i> seethed.
11	14th, 15th and 16th November.	19 10	1 15	488 10	61 29 12	25 0	3 6 10	J. Indigo - <i>Rabbi Chowmas</i> seethed.
12	16th November.	2 0	1 25	57 20	5 10 8	28 30	2 25 4	Barley, <i>Makri</i> , Java Indigo.
13	..	11 0	1 20	464 30	39 25 0	42 10	3 24 0	Indigo-Oats - <i>Chowmas</i> seeth matured.
14	..	6 0	1 17	266 10	17 26 8	44 10	2 37 12	Indigo - Oats - <i>Chowmas</i> seeth matured.
15	..	9 0	1 19	280 20	28 30 0	31 10	3 7 12	
		93 5	..	3,335 0	307 33 10	35 30	3 12 2	

* This field was an experiment plot manured with remainders of chemical manures bought the previous years. We found afterwards on analysis at Pusa, that they were more or less deteriorated.

The following table shows working and manufacturing outlay on the above fields, with the results and their probable value.

It will be noted that in this account every item of expenditure however small has been entered.

TABLE II.

FARM EXPENDITURE.

Preparation and sowings.

	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Rent of <i>bighas</i> 93.5 at Rs. 2 per <i>bigha</i>	279	12	0
Preparation expenses	288	13	6
Value of acclimatised seed for sowing Mds. 134.32.5 at Rs. 6 per maund. ⁽¹⁾	808	15	0
Insurance when harvest stored away ⁽²⁾	75	15	0
TOTAL	1,453	7	6

(1) When farming and manufacturing are considered two separated industries, cost of seed has to be put in the manufacturing account. The manufacturer gets back the amount of seed provided whilst the farmer retains the balance as a profit.

(2) In the above case the insurance fee also has to go to the manufacturing account.

FARM EXPENDITURE.

Pulling or harvesting—Doriah and outworks.

	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Pulling	194	4	3
Bundling	71	0	9
Rippling	177	10	9
Stacking flax in field and thatching	44	6	0
Cutting <i>Kapa</i> for thatching	2	11	0
Cutting <i>Sabi</i> grass	0	14	0
Making <i>Sabi</i> strings including value of grass	46	10	0
Prepering flax seed	27	8	8
Making <i>latti</i> for flax store house	3	2	0
Repairing <i>chatis</i> for flax store house	19	2	0
Cost of thatching flax store house	13	8	0
Bamboos	6	0	0
Grease and castor oil on winnow	1	4	7
Cost of tin boxes for keeping flax seed	2	7	0
Clearing drainage	0	10	0
Carting flax straws to store house	46	14	6
The Mate's wages	15	9	9
Weeding	0	14	3
TOTAL	674	9	6

MANUFACTURING PROCESSES.

Retting.

	<i>Rs. a. p.</i>
Loading and unloading vats, spreading, turning, bundling, etc.	137 2 6
Carting to and from vats	47 13 0
Coolies in carting straws	30 12 0
„ in unloading the carts	23 12 0
Wages of the Pinman on vats	7 4 9
Cleaning and washing vats and reservoir	7 13 6
Cost of Portland-cement, mason and coolies in repairing vats	8 11 9
Cost of bamboos for <i>chatis</i> on vats	19 10 0
Repairing old and making new <i>chatis</i>	10 10 0
Wages of stoker and <i>mistri</i> on pumping water	10 3 6
Cost of coal and wood as fuel	119 13 6
Machinery and castor oil	9 11 0
Old bags and hemp	2 15 6
Red and white lead and thread	2 1 0
Kerosene oil for killing mosquitoes in vats	1 9 0
Cutting and clearing jungles on spreading ground	0 11 9
Wages of Mate	13 4 9
	<hr/> 453 15 6 <hr/>

Breaking and scutching.

	<i>Rs. a. p.</i>
Cost of breaking the flax straws	56 15 3
„ scutching the flax straws	361 0 9
Clearing flax house and engine	11 1 0
Making <i>totties</i> for flax house	2 6 6
Cost of wood and preparing blades and sand paper.	25 3 9
Fireman and <i>mistri</i> on engine	26 11 6
Cost of kerosene oil for cleaning engine	0 10 3
Castor, machinery and mustard oil	54 4 0
Grease	0 8 3
Coal	13 13 0
Red and white lead and thread	3 11 3
Nails and empty tins	1 4 9
Wages of flax house mate	11 11 6
	<hr/> 569 5 9 <hr/>

<i>Despatching.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Hessian cloth	81	11	3
Jute for strings	14	13	0
Baling and sewing	24	9	0
Carting flax and tow from Dooriah to Motipore station.	15	13	6
Food with mates twice	0	15	0
„ „ carters twice	0	9	6
Wire to Cox Shipping Company	0	8	6
No. 1 Bill Cox & Co. from Motipore to Antwerp .	611	0	0
No. 2 „ „ „ „ „ (approximate).	1,079	0	0
	1,828	15	9

<i>Dooriah extra charges.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
European and native establishment <i>bigha</i> 93.5 at Rs. 4 per <i>bigha</i> .	373	0	0
Hire of engine at Rs. 5 per day × 68 days . . .	340	0	0
Interest on capital Rs. 7,450 at 10 per cent. .	745	0	0
(See report 1910-11, table III).			
Interest on outlay Rs. 4,981-1 at 8 per cent. .	398	8	0
	1,856	8	0

The total expenditure up to delivery at the port of destination is thus as follows :—

	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Farm expenditure	2,128	1	0
Manufacturing process	1,023	5	3
Other charges	3,685	7	9
	6,836	14	0

PROBABLE RETURNS AND NET BALANCE, 1910-11.

<i>Returns.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Seed sown and sold mds. 278 at Rs. 7.3 per md.*	1,998	2	0
„ „ „ „ 28.3 at Rs. 7.8 „	210	9	0
Flax fibre mds. 263 at Rs. 28 per maund (transp. and selling charges deducted).	7,364	0	0
Tows scutched mds. 212-24 at Rs. 10 per maund (transp. and selling charges deducted).	2,126	0	0
Tows fine mds. 15.25 at Rs. 16 per maund (transp. and selling charges deducted).	250	0	0
TOTAL RETURNS	11,948	11	0

* When farming and manufacturing are considered two separated industries there are no seed returns for the manufacturer, and he undergoes a loss when seed has to be imported.

<i>Balance.</i>	
	<i>Rs. a. p.</i>
Total returns	11,948 11 0
Total expenditure	6,836 14 0
Total of net balance	5,111 13 0

Rs. 5,111-13-0 for *bigdas* 93-5=about Rs. 55 or Rs. 55×1.14558 =Rs. 63 per acre.

Seed will have to be imported now and then.

Hereunder is a table of imported and acclimatised seed used over 20 years. Considered we have an average return of maunds 3.14.

TABLE III.

Imported.	One year acclima- tised.	Two years acclima- tised.	Three years acclima- tised.	REMARKS.
<i>Mds. S.</i>	<i>Mds. S.</i>	<i>Mds. S.</i>	<i>Mds. S.</i>	
1 3 3	Imported seed generally cost from 16 to 21 rupees per maund.
2 ..	3 3	
3 1 3	..	2 3	..	
4 ..	3 4	..	1 4	
5 1 3	..	2 3	..	Mds. 3-14 was the average return in 1910-11.
6 ..	3 4	..	1 4	
7 1 3	..	2 3	..	
8 ..	3 4	..	1 4	
9 1 3	..	2 3	..	
10 ..	3 4	..	1 4	
11 1 3	..	2 3	..	
12 ..	3 4	..	1 4	
13 1 3	..	2 3	..	
14 ..	3 4	..	1 4	
15 1 3	..	2 3	..	
16 ..	3 4	..	1 4	
17 1 3	..	2 3	..	
18 ..	3 4	..	1 4	
19 1 3	..	2 3	..	
20 ..	3 4	..	1 4	
Mds. 12-3 or 4 times imported in 20 years.				

VALUE OF 3 YEARS ACCLIMATISED SEED.

We have tested this on three different fields of different qualities. On two of those fields one half was used for 2 years and the other half for 3 years acclimatised seed. On the third field, which was a bigger one, two *bighas* right through the centre were sown down with 3 years acclimatised seed. There was no marked difference in the straw on the two best fields. But on the third field, which was of inferior quality and not so strong, the straw of the 3 years acclimatised seed was distinctly shorter than the rest of the crop. This leads me to think that three years acclimatised seed should only be used on the best fields.

Next season we shall try some 4 years old seed but with little hope of success.

MANURIAL AND SEED RATE EXPERIMENTS.

Green manuring.—Last year Dooriah applied for some Jubbalpore hemp seed but could not get any. A small amount of *Dhaincha* seed was secured. With this 2 *bighas* were sown. There was only an eight anna germination and when the plant was about 2 feet high, it was ploughed in, and allowed to rot. On the 4th November flax seed was sown in it. On one *bigha* about one maund of superphosphate was used and raked in. The germination was good, but at first the plants appeared to suffer and some died away until rain came. The result was satisfactory considering the poor condition of the soil and the partial failure of the green manuring. There was also a distinct improvement where superphosphate had been applied. This is now the third time that better results are obtained with a moderate addition of this chemical manure. It may not be required when a full green manuring can be applied.

Rate of sowing.—This year our seed was all 95 per cent. germination and over. Let me remark here that in a test, the weak seeds which would give tardy germination must be eliminated. We have sown at the rate of maund 1 and 15 seers per *bigha*. On good strong land, full moisture, freshly manured, it has proved to be too much. Certainly maund 1-10 seers would have been ample and may be maund 1-5 seers would have been sufficient. We will try both next season.

Proposals for next season 1912-13.—We will next year experiment on :—

- (I) Green manuring on a larger scale.
- (II) The value of 4 years acclimatised seed.

- (III) If possible, the value of retting water as a manure.
- (IV) Go further into the matter of intervals between the years of resowing flax in the same field.
- (V) Work off and give an accurate account of the present crop.
- (VI) On the 21st of March a conference was held at Dooriah presided over by B. Coventry, Esq., Officiating Inspector-General of Agriculture in India (now Agricultural Adviser to the Government of India) and also attended by J. M. Wilson, Esq., General Secretary of Behar Indigo Planters' Association. It was finally decided to keep separate accounts, in the following season, on the central factory system.

E. M. VENDEKERKHOVE,

Flax Expert to the Behar Planters' Association

